

Jeffrey D. Ho, MD, FACEP
911Doc Consulting, LLC
1431 Lakeview Avenue
Minneapolis, MN 55416

October 21, 2005

To Whom It May Concern:

I have been asked to review documents and render an expert medical opinion in the case of *Giannetti v. City of Stillwater, et al* (Case No. CV-04-926-B). Per Rule 26 disclosure requirements, the following disclosures apply:

*Qualifications: I am a practicing emergency physician and a licensed peace officer in the state of Minnesota. I serve as an expert medical consultant on in-custody death issues to TASER International. My area of expertise includes research in the area of sudden and unexpected death in law-enforcement custody.

*Publications in the last 10 years include:

1. Ho JD. Sudden in-custody death. *POLICE*, August 2005;46-56.
2. Ho JD. Deaths in American police custody: A 12-month surveillance project. *Ann Emerg Med*, 2005; 46[suppl]:S94.
3. Ho JD. Some more food for thought on the current TASER device literature. *Ann Emerg Med*, TEMS Section Newsletter, Fall 2005.
4. Lindquist MD and JD Ho. "Operational interface with public safety, government, public health and legal entities." *The Paramedic: A Comprehensive Textbook*. Ed. W Chapleau, A Burba, and P Pons. Dubuque: McGraw-Hill Higher Education, 2006 publication pending.
5. Martel M, Miner J, Fringer R, Sufka K, Miamen A, Ho J, et al. Discontinuation of droperidol for the control of acutely agitated out-of-hospital patients. *Prehosp Emerg Care*, 2005;9:44-48.
6. Ho J. Last Night (reflections article). *Acad Emerg Med*, 2003;10:1023.
7. Ho J, et al. Apathy is not welcome here (editorial). *Prehosp Emerg Care*, 2003;7:414-416.
8. Ho J, et al. Case Report: Field extremity amputation with subsequent cardiac arrest. *Prehosp Emerg Care*, 2003;7:149-153.
9. Ho J, et al. The time saved with the use of emergency warning lights and siren while responding to requests for medical aid in a rural environment. *Prehosp Emerg Care*, 2001;5:159-162.
10. Ho J. Response vs. transport times (letter to the editor). *Emerg Med News*, 2000;22:38.
11. Ho J. Misplaced tubes (letter to the editor). *Prehosp Emerg Care*, 2000;4:202.
12. Ho J. Tactical EMS team report. *Minneapolis Police Department after action report for International Society of Animal Geneticists mass gathering incident*. July, 1999.
13. Reed D, Gough J, Ho J, et al. Prehospital consideration of sildenafil-nitrate interactions. *Prehosp Emerg Care*, 1999;3:306-309.
14. Ho J. Lights and sirens or silence? (commentary). *Emerg Med News*, 1999;21:2,36.
15. Ho J, et al. Emergency warning lights and sirens (reply to letter). *Ann Emerg Med*, 1999;34:114-115.

16. Ho J, et al. The time saved with the use of emergency warning lights and sirens while responding to requests for emergency medical aid. *Ann Emerg Med*, 1998;32:585-588.
17. Ho J, et al. Automatic external defibrillation and its effects on neurologic outcome in cardiac arrest patients in an urban two-tiered EMS system. *Prehosp Disaster Med*, 1997;12:284-287.
18. Green S, Rothrock S, Ho J, et al. Failure of adjunctive bicarbonate to improve outcome in severe pediatric diabetic ketoacidosis. *Ann Emerg Med*, 1998;31:41-48.

*Compensation for this opinion is billed at a rate of \$150.00 per hour for time rendered.

*Previous testimony or deposition as an expert within the last 4 years include:
United States of America v. Jason Malone (Case #04-10051), July 15, 2005.

In preparing this opinion, I have reviewed the following:

1. OK Medical Examiner report dated 5-28-03 signed by Dr. Larry Balding.
2. Amended OK Medical Examiner report dated 8-24-05 signed by Dr. Jeff Gofton.
3. Letter of Review by District Attorney Robert Hudson.
4. OK Bureau of Investigation Report #03-116.
5. Stillwater Police Department reports pertaining to the arrest of Mary Giannetti dated 5-1-03. These include narratives by Officers Miller, Whitley, Parry, McDougal, Comstock, Dillon, Rindfleisch, and Stumbaugh.
6. Stillwater Fire Department Ambulance report.
7. Stillwater Medical Center records for Giannetti admission on 5-1-03
8. Letter of opinion from Dr. Kris Sperry.
9. Deposition of Dr. Jeffery J. Gofton.
10. Deposition of Dr. Kris Sperry.
11. Deposition of Police Chief Norman McNickle
12. Deposition of Detention Officer Scott Whitley
13. Deposition of Lt. Bruce McDougal
14. Deposition of Officer Lindell Miller
15. Deposition of Officer Talara Stumbaugh
16. Videotape of the booking area during Ms. Giannetti's booking and restraint
17. Videotape of the simulated restraint
18. Audiotape from Officer Lindell Miller
19. Previous arrest records for Ms. Giannetti as produced to plaintiff's attorney on September 27, 2005.

Upon my review of this case, it is my opinion that there are several plausible causes for Ms. Giannetti's death. It is quite possible that a combination of these come into play and that Ms. Giannetti's death is not due to any single cause. These are in no particular order:

1. Cardiac Dysrhythmia/Arrhythmia

- a. At autopsy, Ms. Giannetti's heart was found to be enlarged, a finding consistent with a condition known as hypertrophic cardiomyopathy. A well known but poorly understood risk associated with this condition is sudden cardiac death due to spontaneous dysrhythmia.ⁱ
- b. This condition is often unknown to the decedent as it appears was the case in this circumstance.
- c. Conditions associated with fleeing and resisting arrest place people with this condition at elevated risk for sudden death since exertion is known to enhance the risk of this.ⁱⁱ
- d. There have been several cases of this condition described both in the medical and lay literature.^{iii iv}
- e. Additionally, Ms. Giannetti was reported to be on several mental health medications, including Prolixin which is known to have proarrhythmogenic side effects (makes it easier than normal for the heart to develop a spontaneous and sudden abnormal rhythm which could result in sudden death).^v Another medication (Seroquel) that Ms. Giannetti was on has been noted to have an FDA "Alert" warning of sudden cardiac death.^{vi}
- f. Furthermore, it is also thought by many that females are at higher risk for sudden cardiac death in association with certain mental health medications, including Prolixin.^{vii}
- g. Also, a case report exists of an obese person (66 inches tall, 244 lbs) with an underlying mental health condition who had a very similar experience to Ms. Giannetti in that she became agitated and violent and subsequently died proximal to a restraint process that exerted no truncal compression. Similar to Ms. Giannetti, this subject was found to have an unknown enlarged heart at autopsy and was on antipsychotic medication. It was felt that probable cause existed for these factors to have contributed to the subject's death due to an arrhythmia.^{viii}

2. Excited Delirium/Metabolic Acidosis

- a. Ms. Giannetti demonstrated several findings that may be consistent with an excited delirium condition.^{ix x} These included excessive diaphoresis (sweating, as reported by arresting and detention officers), irrational behavior (fleeing/resisting), paranoia (fleeing/resisting, assaulting others), excessive strength (requiring multiple officers to control her), inappropriate, delirious or incoherent speech (made several statements to officers that did not fit in the context of this setting such as the "swinging dead meat", "cannibalism", and "liver and onion" type statements made to officers as reported by Officer Comstock) and agitation (described as fidgeting by Detention Officer Whitley).

- b. The condition of Excited or Agitated Delirium is described in the literature and is associated with metabolic acidosis and death.^{ix xi xii}
- c. Ms. Giannetti was known to have underlying mental health problems (Bipolar disease with severe psychotic features). It is documented by Dr. Nicman that she had multiple admissions recently to Midwest City and St. Anthony's for this which indicates poor control of this problem. She was on Prolixin which is known to have features of Excited Delirium (described as neuroleptic malignant syndrome) as side effects.^{xiii} Her underlying mental health problems are associated with the condition of excited delirium that can potentially lead to metabolic acidosis. In fact, Excited Delirium appears to be associated almost exclusively with 2 mental illnesses: Schizophrenia with paranoid features and Bipolar disease.^{xiv}
- d. Ms. Giannetti was found to be profoundly acidotic upon arrival to the hospital (pH 6.747/ pCO₂ 54.7/ pO₂ 392.7/HCO₃ 7.4). These findings suggest a combined metabolic and respiratory acidosis but it is impossible to determine which is occurring first (respiratory arrest primarily leading to respiratory and metabolic acidosis vs. metabolic acidosis from a. cardiac arrest or b. excited delirium leading to such profound acidosis that a respiratory arrest subsequently follows.)
- e. Lastly, according to an authoritative text on excited delirium, Ms. Giannetti carried a risk for excited delirium syndrome in the medium to high risk category based on her previous history and medications.^{xv}

3. Chronic Illicit Substance Abuse

- a. Use of illicit stimulant substances on a chronic basis is associated with elevated risk for induction of an excited delirium condition.
- b. Ms. Giannetti's toxicology screens at the time of autopsy returned negative. While this suggests no recent use of illicit substances, it does not necessarily mean that she was not a chronic user. There have been cases of negative toxicology screens creating a "false negative" forensic picture. It is believed that the most accurate method of determining chronic illicit substance abuse is from hair samples.^{xvi xvii} Hair sampling was not done in this case.
- c. The importance of this question is that chronic use of stimulant substances (e.g. cocaine, methamphetamine, ephedrine) appears to be closely correlated with chemical receptor changes in the brain tissue of these individuals. This brain tissue change is being closely studied by a University of Miami scientist and appears to be very closely correlated with the development of an excited delirium condition. Unfortunately, it is now impossible to determine this as special studies of the brain must be undertaken within 12 hours of death and it does not appear that this was done in this case.^{xviii xix}
- d. I do not mean to imply that Ms. Giannetti was a substance abuser. However, I do not have enough information at hand to determine that she was not and, therefore, cannot rule out this possibility that would elevate her risk for sudden death.

4. Asphyxia

- a. In this category, there are 2 possibilities in question. The first being positional (generally understood as the position that a body is in is theorized to impair respiration). In this category, I include the concept of restraint asphyxia (generally understood as the application of restraint devices, often in certain positions, is theorized to impair respiration). Dr. Sperry has hypothesized that the simple positioning of Ms. Giannetti in a face-down position caused her to asphyxiate due to her obesity and that by lying on her obese abdomen, this interfered with her respirations. In the literature, this theory of position usually also involves a maximal restraint device, often known as "hog-tying" which was not the case here. This theory was first purported by a WA medical examiner, Dr. D. Reay.^{xx} Although Dr. Reay's research was initially accepted, he later retracted his methodology and it should also be noted that despite positioning prisoners in various different positions and restraint devices, in-custody deaths still occur. Furthermore, a subsequent study by Dr. D. Ross found that only 38% of in-custody deaths involved this controversial positioning.^{xxi} Lastly, suffice it to say that the medical community is involved in thoughtful debate as to whether or not this type of mechanism is really possible.^{xxii xxiii} To my knowledge, there has never been medical evidence produced that the position of placing someone in handcuffs behind their back without a hog-tie application causes any impairment of respiration.
- b. The second possibility is a "weight-force" mechanism where Dr. Sperry has hypothesized that enough force was applied to the back and the posterior neck of Ms. Giannetti by the involved officers so as to prevent her from having normal respirations, thereby contributing to or causing asphyxia.
- c. While I would agree with Dr. Sperry that these 2 possibilities merit consideration, I do not agree that they were the definite primary cause of death for the following reasons:
 - i. Dr. Sperry believes that asphyxia was the primary cause of a cardiac dysrhythmia in this subject that had underlying cardiac hypertrophy as found at autopsy in addition to being on a medication that has some pro-arrhythmogenic properties (Prolixin). There are numerous cases each year of people experiencing sudden death attributable to a cardiac anatomic abnormality without an asphyxial event occurring proximal to this. (see previous references in the cardiomyopathy section)
 - ii. In his deposition, Dr. Sperry admits that he does not know many of the specifics involved in this circumstance that may have a direct bearing on the validity of his conclusion. Examples of this include the officers' hand position on Ms. Giannetti, the amount of time that officers' hands were on Ms. Giannetti, etc. Without knowing these details specifically, I find it difficult to understand how Dr. Sperry can conclude that this activity was the cause of Ms. Giannetti's death with any certainty.

- iii. Lt. McDougal's deposition (p. 56, 57) indicates that after getting Ms. Giannetti under control, he asked her to get into a jumpsuit and she made a comment that led him to believe that she was not going to cooperate. She continued to be passively resistant at this time and no officer was restraining or controlling her. She also laughed at this time. All of these lead one to believe that Ms. Giannetti did not asphyxiate during the attempt to gain control of her in the jail and suggest that her cardiorespiratory arrest is likely not due simply to an asphyxial cause.
- iv. Officer Miller's deposition indicates that upon gaining control of Ms. Giannetti, she was no longer in the fully prone position and was breathing for a period of time with no officers restraining her (p. 72). She was quiet (tranquil) at this time but was then noted to have stopped breathing. This is very consistent with described cases of respiratory arrest during metabolic acidosis crises from excited delirium causes and not necessarily consistent with an asphyxial etiology.^{xxiv xxv xxvi}
- v. Detention Officer Whitley's deposition indicates that he was not exerting downward pressure on Ms. Giannetti's thorax or neck. Therefore it sounds unlikely that the officers were truly exerting enough force upon Ms. Giannetti to cause an asphyxial death. Dr. T. Chan conducted a "weight-force" study in the lab and was unable to demonstrate asphyxia with the use of up to 50 lbs of weight on a person's thorax.^{xxvii}
- vi. Ms. Giannetti was 5 feet 9 inches and 297 lbs at the time of her death. I consider this to be an obese body habitus but I question whether or not this degree of obesity is enough to asphyxiate someone by placing them on their abdomen. At some point, massive obesity can play a role in asphyxia but I am not sure that Ms. Giannetti's measurements meet that and I am unsure of any medical studies giving a hard and fast measurement on this. Some examples of persons that approach Ms. Giannetti's body habitus that show no difficulty in lying on their abdomens can be found in measurements of college football players: Rock Cartwright, KS State, 5'7", 237lbs; Pat McCall, OR State, 5'9", 209lbs; Ron Johnson, Arkansas, 5'9" 214lbs; Jarrett Ferguson, VA Tech, 5'8", 220lbs).^{xxviii}
- vii. Additionally, literature indicates that humans spend approximately 13% of their sleep time in the fully prone position.^{xxix} This literature does not report sudden death in adults in this position. If simply lying in the prone position was dangerous in obese persons, it stands to reason that there should be unexplained deaths of obese persons in the middle of their sleep cycle in this position. This does not appear to be borne out in any surveillance literature.
- viii. Another consideration in this case is Ms. Giannetti's recognized obesity. Dr. Sperry's opinion is that this obesity directly

contributed to an asphyxial cause of death. Previous literature indicates that a majority of in-custody death subjects are obese according to body-mass index standards.^{xxx} This seems like a significant factor until you take into consideration that the majority of the adult US population also fits this category. In addition, obesity is higher in lower socioeconomic groups which tend to represent the vast bulk of deaths due to excited delirium.^{xxxi}

- ix. The simulation video is also supportive of the above concept. In the video, a subject of similar stature, weight and body habitus to Ms. Giannetti was put into the restraint positions that Ms. Giannetti was in on the night of her death. During this simulation, the subject reported no difficulty breathing, shortness of breath or any other complaint. This calls into question Dr. Sperry's opinion that simply putting a subject with this body habitus into a prone position causes asphyxiation or respiratory compromise.
- x. Additionally, the concept of weight force asphyxia in this setting is likely to require some time to take effect. Unless the weight force applied is extreme, the process of asphyxia from weight force being applied should take several minutes to hours to occur. In one study, the application of up to 50 lbs of weight force on the thorax of a person in a maximal restraint position did not cause any evidence of poor ventilation or oxygenation.^{xvi}
- xi. Lastly, a case report exists of an obese person (60.5 inches tall, 240 lbs) with an underlying respiratory condition who had a very similar experience to Ms. Giannetti in that he became agitated, violent and went to the floor and was held in position by bystanders. He subsequently died and it was thought that the obesity and the position of the subject impaired respiration and was a contributory factor in the death. The author of this case report, however, admits that this theory is truly speculative and does not appear to have any known medical evidence supporting it.^{xxxii}

5. Conclusion

- a. Based on the above summary, I believe that Dr. Sperry's and Dr. Goffon's amended opinion has possible merit. However, also based on the above, I believe that it is entirely possible that other possibilities also exist as to the causation of Ms. Giannetti's death. The possibilities (in no particular rank order) include:
 - i. Spontaneous fatal arrhythmia due to underlying cardiomyopathy.
 - ii. Prolixin and/or Seroquel induced fatal arrhythmia.
 - iii. Excited Delirium condition likely secondary to underlying mental health disease leading to profound metabolic acidosis and subsequent cardiorespiratory arrest.
 - iv. Excited Delirium condition possibly secondary to chronic illicit substance abuse.
 - v. Primary asphyxia due to obesity and unrecognized weight-force being applied by the officers.

- vi. Primary Excited Delirium induced metabolic acidosis that worsened due to positioning and possible weight-force application by the officers.
 - vii. A combination of any of the above.
- b. Furthermore, in the most recent surveillance data on in-custody deaths, Ms. Giannetti demonstrated several things that make her no different than the majority of subjects who have died in police custody. Many of these subjects were not subjected to weight force restraint procedures and succumbed regardless of this factor. The biggest predictor of death in these subjects appears to be exhibition of bizarre behavior prior to arrest which Ms. Giannetti had. It is, therefore, unclear what the true physiologic state was of Ms. Giannetti at the time of contact with the police and an excited delirium/metabolic acidosis condition is certainly possible.^{xxxiii}
- c. Additionally, I must disagree with Dr. Gofton's deposition (p. 75-79) in which he forms his opinion of positional asphyxia based on a microscopic slide of brain tissue showing changes consistent with anoxic encephalopathy. In his deposition, he and I both agree that these changes are due to cessation of cardiac function. He allows that there are several reasons why Ms. Giannetti was at risk for sudden cessation of cardiac function. However, he states that he came to the conclusion that microscopic slides of this brain tissue convinced him that positional asphyxia was the cause of sudden cessation of cardiac function in this case. I cannot agree with this because there is simply no way to determine that from brain tissue. The finding of anoxic encephalopathy is very nonspecific and only tells you that the brain was not getting enough oxygen. It tells you nothing about what the cause of that lack of oxygen was from. (A good layperson example of this is that if you look at a home after a fire, you can tell that the damage to the home was done by fire because there are changes evident such as soot residue, charring, smoke damage, etc. Your conclusion that fire damaged the home would be correct. However, you cannot say with any certainty what caused the fire to start based on this evidence and to speculate that it started from a lightning strike or from someone smoking in bed would simply be a guess.)
- d. Given these possibilities, I believe that it is impossible to say with complete certainty that any one of these causes was more likely than the others and it is quite possible that Ms. Giannetti's death is due to multiple factors and underlying medical conditions. In previously published works it has been noted that these types of deaths are often assigned faulty causes because legal reasoning favors single, proximate causes and the most proximate intervention to the time of death is often felt to be causative.^{xxxiv} This is faulty logic and confuses the proximity of an action with causality which is certainly a possibility with Drs. Sperry and Gofton's assessment.

Respectfully Submitted,

Jeffrey D. Ho, MD, FACEP
October 21, 2005

References

- ⁱ http://www.hopkinsmedicine.org/cardiomypopathy/sudden_cardiac_death.htm
- ⁱⁱ <http://www-unix.oit.umass.edu/~excs597k/carpenter/sdathlete.htm>
- ⁱⁱⁱ <http://www.emedicine.com/MED/topic276.htm>
- ^{iv} <http://www.startribune.com/stories/1556/5581841.html>
- ^v <http://www.pai.ca.org/OPR/Empowerment/Psychotropics.htm>
- ^{vi} <http://www.fda.gov/cder/drug/infosheets/hcp/quetiapinehcp.htm>
- ^{vii} <http://www.psychiatrytimes.com/showArticle.jhtml?articleID=60400114>
- ^{viii} Di Maio TG and VJM Di Maio. *Excited Delirium Syndrome*, 1st ed. Taylor and Francis Group, New York, 2006, p.84.
- ^{ix} British Columbia Office of the Police Complaint Commissioner, TASER Technology Review, OPCC File #2474, September, 2004:50.
- ^x Di Maio TG and VJM Di Maio. *Excited Delirium Syndrome*, 1st ed. Taylor and Francis Group, New York, 2006.
- ^{xi} Bell L. On a Form of Disease Resembling Some Advanced Stages of Mania. . . *Am J of Insanity*, 1849;6:97-127.
- ^{xii} Hick J. et al. Metabolic Acidosis in Restraint-Associated Cardiac Arrest: A Case Series. *Acad Emerg Med*, 1999;6:239-243.
- ^{xiii} http://www.mentalhealth.com/drug/p30-m03.html#Head_6
- ^{xiv} Di Maio TG and VJM Di Maio. *Excited Delirium Syndrome*, 1st ed. Taylor and Francis Group, New York, 2006, p.119-120.
- ^{xv} Di Maio TG and VJM Di Maio. *Excited Delirium Syndrome*, 1st ed. Taylor and Francis Group, New York, 2006, p.121.
- ^{xvi} <http://www.ncjrs.org/txtfiles/hair.txt>
- ^{xvii} Stephens BG, et al. Criteria for interpretation of cocaine levels in human biological samples and their relation to the cause of death. *Am J Forensic Med Pathol*, 2004;25:1-10.
- ^{xviii} http://www.healthology.com/faculty_bio.asp?d=nash_deborah
- ^{xix} http://www.calpoliceimage.org/excited_delirium_dee.htm
- ^{xx} Reay DT, et al. Positional Asphyxia During Law Enforcement Transport. *Am J Forensic Med Path*, 1992;13:90-97.
- ^{xxi} Ross DI. Factors Associated with Excited Delirium Deaths in Police Custody. *Modern Pathology*, 1998;11:1127-1137.
- ^{xxii} Glatter K, et al. Positional asphyxia: Inadequate oxygen or inadequate theory? *Forensic Science International*, 2004;141:201-202.
- ^{xxiii} Karch SB, et al. Agitated delirium versus positional asphyxia. *Ann Emerg Med*, 1995;26:750-761.
- ^{xxiv} Pollanen M, et al. Unexpected death related to restraint for excited delirium: a retrospective study of deaths in police custody an in the community. *Can Med Assoc J*, 1998;158:1603-1607.
- ^{xxv} Stratton SJ, et al. Factors associated with sudden death of individuals requiring restraint for excited delirium. *Am J Emerg Med*, 2001;19:187-191.
- ^{xxvi} Laur D, et al. Excited delirium and its correlation to sudden and unexpected death proximal to restraint- a review of the current and relevant literature. November 2004. <http://www.taser.com/documents/Sudden.pdf>

^{xxvii} Chan TC, et al. Weight Force During Prone Restraint and Respiratory Function. *Am J Forensic Med Pathol*, 2004;25:185-189.

^{xxviii} <http://archive.profootballweekly.com>

^{xxix} Gordon SJ, et al. Self recorded versus reported sleep position: An observational study. *Internet J of Allied Health Science and Practice*, 2004;2. http://ijahsp.nova.edu/articles/Vol2num1/Gordon_sleep.htm

^{xxx} Stratton SJ, et al. Sudden death in individuals in hobble restraints during paramedic transport. *Ann Emerg Med*, 1995;25:710-712.

^{xxxi} Di Maio TG and VJM Di Maio. *Excited Delirium Syndrome*, 1st ed. Taylor and Francis Group. New York, 2006, p. 27.

^{xxxii} Di Maio TG and VJM Di Maio. *Excited Delirium Syndrome*, 1st ed. Taylor and Francis Group. New York, 2006, p. 87.

^{xxxiii} Ho JD, et al. Deaths in American police custody: A 12 month surveillance study. *Ann Emerg Med*, 2005;46 [suppl]:S94.

^{xxxiv} Farnham FR and HG Kennedy. Acute excited states and sudden death: much journalism, little evidence. *Br Med J*, 1997;315:1007-1008.

Department of Emergency Medicine
Hennepin County Medical Center
701 Park Avenue South
Minneapolis, MN 55415

612-073-4904
JHo911doc@usm.com

Jeffrey D. Ho, M.D., F.A.C.E.P.

EDUCATION:

DEGREE – Associate of Science (Criminal Justice/Law Enforcement)

Inver Hills Community College
Inver Grove Heights, Minnesota
March, 2005

FELLOWSHIP – Emergency Medical Services/Prehospital Care

Hennepin County Medical Center (SAEM/PhysioControl Site)
Minneapolis, Minnesota
July, 1995 – June, 1996

RESIDENCY – Emergency Medicine

Hennepin County Medical Center
Minneapolis, Minnesota
May, 1992 – June, 1995

DEGREE – Doctor of Medicine

Loma Linda University School of Medicine
Loma Linda, California
August, 1988 – May 1992

DEGREE – Bachelor of Science (Biology/Zoology)

Loma Linda University College of Arts and Sciences
Riverside, California
September, 1984 – June, 1988

HONORS and AWARDS:

April, 2005 – Outstanding Accelerated Program Student Award

Inver Hills Community College, Inver Grove Heights, Minnesota
*Awarded by the college faculty in recognition of outstanding academic achievements in the accelerated law enforcement training program.

May, 2003 – Archibald Bush Foundation Medical Fellowship

Archibald Bush Foundation, St. Paul, Minnesota
*Competitively awarded as a career enhancement grant to allow me to pursue cross-training in law enforcement.

June, 2002 –Ernest Ruiz Teaching Award

Hennepin County Medical Center, Minneapolis, Minnesota
*Awarded by the senior residents in Emergency Medicine in recognition of outstanding teaching contributions within the residency training program.

May, 2002 – Chiefs Award of Merit

Police Department, Minneapolis, Minnesota
*Awarded in recognition of outstanding leadership provided to the tactical paramedic program of the Emergency Response Unit.

December, 2001 – Service Award

Police Department, Minneapolis, Minnesota

*Awarded in recognition of service to the Emergency Response Unit.

HONORS and AWARDS (continued):**January, 2000 – Meritorious Service Award**

Fire Department, Minneapolis, Minnesota

*Awarded in recognition of meritorious and heroic service during the extrication and rescue of an accident victim resulting in the saving of a human life.

November, 1999 – Fellow of the American College of Emergency Physicians

ACEP Annual Meeting, Las Vegas, Nevada

*Fellow status is granted only after meeting stringent training, teaching and certification standards.

July, 1997 – Best Oral Presentation of Original Research Award

National Association of EMS Physicians Annual Meeting, Lake Tahoe, Nevada

*Awarded for presentation of a research project conducted during fellowship.

May, 1997 – Award of Recognition

Dakota County Technical School, Dakota County, Minnesota

*Awarded for providing mentorship in emergency medicine to high school students considering health care careers.

June, 1995 – James Andersen Scholarship Award

Hennepin County Medical Center, Minneapolis, Minnesota

*Annually awarded to a single senior resident who demonstrates excellence in leadership and clinical abilities in emergency medicine.

March, 1995 – University of Minnesota School of Medicine Resident Physician**Distinguished Teaching Award Nominee**

University of Minnesota School of Medicine, Minneapolis, Minnesota

*Nominated by the University of Minnesota senior medical students for excellence in academic and clinical teaching.

June, 1994 – Emergency Medicine Chief Resident

Hennepin County Medical Center, Minneapolis, Minnesota

*Selected by my colleagues to maintain and promote intra and interdepartmental leadership, rapport and education through a wide variety of administrative responsibilities.

February, 1993 – Resident Association Representative Elect

Hennepin County Medical Center, Minneapolis, Minnesota

*Elected by my peers to serve a 2 year term to represent my residency at the national level to the Emergency Medicine Residents Association of the American College of Emergency Physicians.

May, 1991 – California Medical Association Student Representative Elect

Loma Linda University School of Medicine, Loma Linda, California

*Elected by a state planning agency to serve on the Association's Committee for Emergency and Disaster Preparedness.

March, 1989 – CIBA/GEIGY Award

Loma Linda University School of Medicine, Loma Linda, California

*Awarded annually to a medical student for outstanding community service in medical related projects.

May, 1988 – Cum Laude Graduate

Loma Linda University College of Arts and Sciences, Riverside, California

HONORS and AWARDS (continued):

May, 1985 through May, 1988 – Dean's List of Academic Achievement

Loma Linda University College of Arts and Sciences, Riverside, California

January, 1988 – Carnation Corporation Scholarship

Loma Linda University College of Arts and Sciences, Riverside, California

*For providing community service while maintaining standards of academic excellence.

January, 1986 – Howard O. Welty Scholarship

Loma Linda University College of Arts and Sciences, Riverside, California

*For achieving standards of academic excellence.

April, 1984 – Loma Linda University Academic Scholarship

Orangewood Adventist Academy, Garden Grove, California

*For academic excellence prior to entering undergraduate study

ACADEMIC APPOINTMENTS:

July, 1996 through Present – Assistant Professor of Emergency Medicine

University of Minnesota School of Medicine

Twin Cities Campus, Minneapolis, Minnesota

CLINICAL EXPERIENCE:

July, 1996 through Present – Attending Faculty, Emergency Medicine

Hennepin County Medical Center (Level I Trauma Center)

Hennepin Faculty Associates, Minneapolis, Minnesota

June, 1996 through June, 1998 – Courtesy Staff Physician, Emergency Medicine

Ridgeview Medical Center, Waconia, Minnesota

November, 1993 through June, 1997 – Courtesy Staff Physician, Emergency Medicine

District Memorial Hospital, Forest Lake, Minnesota

United Hospital, St. Paul, Minnesota

Northfield Hospital, Northfield, Minnesota

Emergency Practice Associates, Faribault and Hibbing, Minnesota

MEDICAL DIRECTOR EXPERIENCE:

August, 2004 through Present – Expert Medical Consultant

TASER International, Scottsdale, Arizona

*Provide research expertise and expert medical advice for a company that manufactures conducted electrical weapons for law enforcement, military and civilian application.

January, 2003 through December, 2003 – Medical Director

Medevac, Inc., Minneapolis, Minnesota

*Provide medical oversight, treatment protocols, standing orders, equipment and product evaluation for a company that provides basic life support instruction, automatic external defibrillator equipment and training and limited event emergency medical services.

**September, 2002 through November, 2003 – Chief Medical Officer
MN-1 Disaster Medical Assistance Team, Minneapolis, Minnesota**

*Direct and participate on a team of medical personnel tasked for deployment by the Federal Office of Emergency Preparedness to national needs for emergency medical aid.

MEDICAL DIRECTOR EXPERIENCE (continued):

**September, 1997 through May, 2001 – Medical Director & Tactical Physician
Police Department Emergency Response Unit, Minneapolis, Minnesota**

*Direct and participate on a team of 10 medical personnel assigned to the SWAT team.

**July, 1998 through Present – Director of EMS Fellowship Program
Hennepin County Medical Center, Minneapolis, Minnesota**

**May, 1997 through Present – Medical Director of Public Safety/Paramedic Services
Fire Department, Edina, Minnesota**

*Direct a fire-service based paramedic program of 25 personnel.

**July, 1996 through Present – Associate Medical Director of Paramedic Services
Hennepin County Ambulance Service, Minneapolis, Minnesota**

*Assist with the direction of an urban, third-service based paramedic program of 110 personnel.

**July, 1996 through Present – Director of Resident EMS Education
Hennepin County Medical Center, Minneapolis, Minnesota**

**July, 1996 through Present – Medical Director of Spectator Services
Hubert H. Humphrey Metrodome, Minneapolis, Minnesota**

*Direct a stadium first-responder team of 60 personnel.

**July, 1996 through July, 1998 – Medical Director of Spectator Services
Minneapolis Children's Grand Prix, Minneapolis, Minnesota**

*Directed a fully enclosed race track based first-responder team of 20 personnel.

OTHER EXPERIENCE:

October, 2005 through Present – Examiner

American Board of Emergency Medicine, Lansing, Michigan

*Responsible for administering the oral examination to candidates pursuing board certification in emergency medicine.

July, 2005 through Present – Police Officer

Buffalo Lake Police Department, Buffalo Lake, Minnesota

*Responsible for providing law enforcement services and protection of life and property to the surrounding community.

May, 1989 through June, 1990 – Clinic Director

Social Action Corps Clinic, Rialto, California

*Responsible for directing the efficient operation of a student-run medical clinic which provided low cost health care to an indigent population.

February, 1986 through May, 1988 – Fire Apparatus Engineer

Riverside County Fire Department, Riverside County, California

*Provided emergency medical service and fire suppression activities to the surrounding community.

November, 1984 through February 1986 – Firefighter

Riverside County Fire Department, Riverside County, California

*Provided emergency medical service and fire suppression activities to the surrounding community.

OTHER EXPERIENCE (continued):**November, 1984 through May, 1988 – Firefighter**

Home Gardens Volunteer Rescue Squad, Home Gardens, California

*Provided emergency medical and rescue services to the surrounding community on a volunteer basis.

MILITARY EXPERIENCE:**June, 1992 through September, 1998 – Army National Guard, Minnesota**

Major, Medical Corps

434th Main Support Battalion and STARC Detachment 7

Cottage Grove and Minneapolis, Minnesota

Honorable Discharge

May, 1989 through June, 1992 – Army National Guard, California

Second Lieutenant, Medical Service Corps

143rd Evacuation Hospital

Los Alamitos, California

Honorable transfer to Minnesota

Military Awards Earned:

1. Army Reserve Component Achievement Award (1997)
2. Minnesota State Service Award (1997)
3. Army Award of Accomplishment (1996)
4. Army Service Award (1995)
5. National Defense Service Medal (1993)
6. Humanitarian Service Award (1989)
7. California Medal of Merit (1989)

PUBLICATIONS:

Ho J: Some More Food for Thought on the Current TASER Device Literature. *American College of Emergency Physicians Tactical EMS Interest Group Newsletter* 2005; 3rd Quarter.

Ho J: Sudden In-Custody Death. *POLICE* August 2005; 29:46-56.

Martel M, Miner J, Fringer R, Sufka K, Miamen A, Ho J, et al: Discontinuation of Droperidol for the Control of Acutely Agitated Out-of-Hospital Patients. *Prehosp Emerg Care* 2003; 9:44-48.

Ho J: Last Night (reflections piece). *Acad Emerg Med* 2003; 10:1023.

Ho J, Lindquist M, Bultman L, Torstenson G: Apathy is not Welcome Here (editorial). *Prehosp Emerg Care* 2003; 7:414-416.

Ho J, Conterato M, Mahoney B, et al: [Case Report] Field Extremity Amputation with Subsequent Cardiac Arrest. *Prehosp Emerg Care* 2003; 7:149-153.

Ho J, Lindquist M: The Time Saved with the Use of Emergency Warning Lights and Siren While Responding to Requests for Medical Aid in a Rural Environment. *Prehosp Emerg Care* 2001; 5:159-162.

Ho J: Response vs. Transport Times (letter to ed.). *Emerg Med News* 2000; 22:38.

Ho J: Misplaced Tubes (letter to ed.). *Prehosp Emerg Care* 2000; 4:202.

PUBLICATIONS (continued):

Ho J: Tactical EMS Team Contributions. *Minneapolis Police Department After Action Report for International Society of Animal Geneticists Mass Gathering Incident*, July, 1999.

Reed D, Gough J, Ho J, et al: Prehospital Consideration of Sildenafil-Nitrate Interactions. *Prehosp Emerg Care* 1999; 3:306-309.

Ho J: Lights and Sirens or Silence? (commentary). *Emerg Med News* 1999; 21:2, 36.

Ho J, Casey B: Emergency Warning Lights and Sirens (reply to letter). *Ann Emerg Med* 1999; 34:114-115.

Ho J, Casey B: The Time Saved With the Use of Emergency Warning Lights and Sirens While Responding to Requests for Emergency Medical Aid. *Ann Emerg Med* 1998; 32:585-588.

Ho J, Held T, Heegard W, et al: Automatic External Defibrillation and its Effects on Neurologic Outcome in Cardiac Arrest Patients in an Urban Two-Tiered EMS System. *Prehosp Disaster Med* 1997; 12:284-287.

Green S, Rothrock S, Ho J, et al: Failure of Adjunctive Bicarbonate to Improve Outcome in Severe Pediatric Diabetic Ketoacidosis. *Ann Emerg Med* 1998; 31:41-48.

GRANT EXPERIENCE:

May, 2003 - \$56,000.00

Source: Archibald Bush Foundation Medical Fellowship Grant

Project: Physician cross-training in law enforcement to provide emergency medical care in tactical, high-risk environments.

January, 1998 - \$75,000.00

Source: American International Health Alliance

Project: The Effect of Introducing Automatic External Defibrillation Upon the Citizens of an Emerging Country (Republic of Moldova)

December, 1997 - \$7,500.00

Source: Twin Cities Metropolitan 911 Board

Project: The Effect of Utilizing ALS "Jump Cars" Within a Two-Tiered EMS System

October, 1995 - \$1,000.00

Source: Twin Cities Metropolitan 911 Board

Project: The Time Saved With the Use of Emergency Warning Lights and Sirens While Responding to Requests for Emergency Medical Aid in an Urban Environment

FORMAL PRESENTATIONS:

September, 2005 – 2005 Scientific Assembly of the American College of Emergency Physicians

Washington, D.C.

Ho J: Deaths in Police Custody: An 8-Month Surveillance Study

***Poster presentation of original research**

September, 2005 – Third Mediterranean Emergency Medicine Congress

Nice, France

Ho J: Deaths in American Police Custody: A 12-Month Surveillance Study

***Oral Presentation of original research**

January, 2005 – Annual Meeting of the National Association of EMS Physicians,

Naples, Florida

FORMAL PRESENTATIONS (continued):

Bultman L, Ho J. Page D: Safety Restraint Usage Patterns in an Urban EMS System

***Poster presentation of original research**

January, 2005 – Annual Meeting of the National Association of EMS Physicians,

Naples, Florida

Bultman L, Ho J. Page D: Disposition of Undesignated patients in Urban Minnesota

***Poster presentation of original research**

September, 2004 – Minnesota Ambulance Medical Directors Annual Conference,

Alexandria, Minnesota

Bultman L, Ho J. Page D: Preliminary Report on Undesignated Patient Disposition in Urban Minnesota

***Oral presentation of original research**

January, 2004 – Annual Meeting of the National Association of EMS Physicians,

Tucson, Arizona

Ansari R, Ho J: Hand Sanitization Rates in an Urban EMS System

***Oral presentation of original research,**

***Awarded Best Oral Presentation of Original Research**

January, 2001 – Annual Meeting of the National Association of EMS Physicians,

Sanibel Island, Florida

Black C, Ho J: 1 Paramedic vs. 2-How Often is a Second Paramedic Utilized in an Urban EMS System?

***Poster presentation of original research**

September, 1997 – Minnesota Ambulance Medical Directors Annual Conference, Alexandria, Minnesota

Ho J: Preliminary Report on the Time Saved with the Use of Emergency Warning Lights and Siren While Responding to Requests for Medical Aid in a Rural Environment.

*Oral presentation of original research

May, 1997 – Annual Meeting of the Society for Academic Emergency Medicine, Washington, D.C.

Ho J: Time Saved with the Use of Emergency Warning Lights and Sirens While Responding to Requests for Medical Aid.

*Poster presentation of original research

January, 1997 – Mid-Year Scientific Meeting of the National Association of EMS Physicians, Lake Tahoe, Nevada

Ho J: Time Saved with the Use of Emergency Warning Lights and Sirens While Responding to Requests for Medical Aid.

*Oral presentation of original research

*Awarded Best Oral Presentation of Original Research

November, 1996 – Twin Cities Metropolitan 911 Board, St. Paul, Minnesota

Ho J: Final Report on the Time Saved with the Use of Emergency Warning Lights and Sirens While Responding to Requests for Medical Aid in Minneapolis.

*Oral presentation of original research

May, 1996 – Annual Meeting of the Society for Academic Emergency Medicine, Denver, Colorado

Ho J: Automatic External Defibrillation and its Effects on Neurologic Outcome in Cardiac Arrest Patients in an Urban Two-Tiered EMS System.

*Poster presentation of original research

FORMAL PRESENTATIONS (continued):

May, 1996 – Annual Meeting of the Society for Academic Emergency Medicine, Denver, Colorado

Ho J: The Utility of the Routine Swimmers View Cervical Radiograph in Addition to the Cross Table Lateral Cervical Radiograph in Detecting Cervical Spine Injury in Critical Trauma Patients.

*Poster presentation of original research

May, 1995 – Clinical-Pathologic Case Competition at the Annual Meeting of the Society for Academic Emergency Medicine, San Antonio, Texas

Ho J: Cutaneous Actinomycosis

*Oral presentation of a case study

INVITED PRESENTATIONS:

**September, 2005 – International Association of Chiefs of Police
Miami, Florida**

Ho J: In Custody Death Issues

*Oral presentation of medical literature, research data and experience

**April, 2005 – TASER Tactical Conference
Scottsdale, Arizona**

Ho J: In Custody Death and Law Enforcement Considerations

*Oral presentation of medical literature, research data and experience

**June, 2004 – Metro Atlanta Police Chiefs Association
Atlanta, Georgia**

Ho J: Medical Considerations for In-Custody Deaths

***Oral presentation of medical literature and experience**

**September, 2002 – Annual Meeting of the International Rescue Association,
Bloomington, Minnesota**

Ho J: Ballistic Considerations for Field EMS Personnel

***Oral presentation of continuing medical education**

**May, August, September and October, 2000 – Annual Meetings of the Hennepin County
Medical Center Trauma Team; Minnesota ACEP; Minnesota Ambulance
Medical Directors; and LifeLink III Prehospital Providers; Bloomington, Brainerd,
Alexandria and Red Wing, Minnesota**

Ho J: Rescue on Interstate 35

***Oral presentations of a case study**

**September, 1999 – Ambulance Personnel Instruction at Republican Trauma Hospital,
Chisinau, Moldova**

Heggaard W, Ho J: Automatic External Defibrillation

***Oral presentation of continuing medical education and research proposal**

**May, 1998 – Trauma Grand Rounds at Careggi Medical and Trauma Center, Florence,
Italy**

Ho J: American Emergency Medical Services

***Oral Grand Rounds presentation**

**May, 1998 – Trauma Grand Rounds at Republican Trauma Hospital, Chisinau,
Moldova**

Ho J: Advances in Trauma Care

***Oral Grand Rounds presentation**

INVITED PRESENTATIONS (continued):

January, 1998 – Minnesota Tactical EMS Conference, Minneapolis, Minnesota

Ho J: Firearm Injuries

***Oral presentation of continuing medical education**

**January, 1998 – Augsburg College Physician Assistant Training Program, Minneapolis,
Minnesota**

Ho J: An Introduction to Emergency Medical Services

***Oral presentation of continuing medical education**

**January, 1997 – Emergency Medicine Grand Rounds at Loma Linda University, Loma
Linda, California**

Ho J: Controversies in EMS

***Oral Grand Rounds presentation**

**February, 1996 – Annual Meeting of the Arrowhead EMS Association, Duluth,
Minnesota**

Ho J: Initial Patient Assessment – Everything You Need to Know

***Oral presentation of continuing medical education**

August, 1995 – The University of Costa Rica College of Medicine National Symposium on Emergency Health Care, San Jose, Costa Rica

Ho J: Advances in Cardiac Care and Emergency Management of HIV Patients

*Oral presentations of continuing medical education

LOCAL ACADEMIC LECTURES:

- 2003 to Present: The Violent Emergency Department Patient – resident education
- 2002 to Present: The Difficult Patient Encounter – resident education
- 1996 to Present: Medical Student Introduction to the EMS System
- 1996 to Present: Residency Update on the State of EMS
- September, 1995: Allergic Reactions – paramedic education
- April, 1995: Basic Head Trauma Management – paramedic education
- March, 1995: Emergency Cardiac Care Update – paramedic education
- March, 1995: Adrenal Emergencies – paramedic education
- October, 1994: Ophthalmologic Emergencies – resident education
- September, 1994: Fluid Resuscitation in Thermal Injuries – resident education
- May, 1994: Cardiopulmonary Emergencies – paramedic education
- October, 1993: Cocaine Related Chest Pain – resident education
- May, 1993: Rectal Foreign Bodies – resident education
- April, 1993: Acute Pancreatitis – resident education

COMMITTEE EXPERIENCE:

Chair

- 2002 to Present: Hennepin County EMS Council/Medical Director Subcommittee
- 1998 to 2002: Hennepin County EMS Council/Paramedic Subcommittee
- 1997 to Present: Minnesota Chapter, American College of Emergency Physicians EMS Committee
- 1996 to 1997: Hennepin County Medical Center Patient Retention Task Force
- 1996 to 1998: Hennepin County EMS Council/Paramedic Education Task Force

COMMITTEE EXPERIENCE (continued):**Boards of Directors**

- 2004 to Present: MN EMS Medical Directors Education Association, Inc. (Secretary/Treasurer)
- 1996 to 1997: Minnesota Chapter, American College of Emergency Physicians
- 1995 to 1998: Minnesota Association of EMS Physicians

Member

- 2003 to Present: American College of Emergency Physicians Section on Tactical EMS (Communications Leader)
- 2000 to 2001: Minneapolis Civil Disturbance Planning Committee
- 1999 to Present: Minnesota Annual Ambulance Medical Director Retreat Planning Committee
- 1997 to Present: LifeLink III Aeromedical Transport Medical Advisory Committee
- 1997 to Present: Hennepin County EMS Council Medical Standards Committee
- 1995 to 1998: Hennepin County EMS Council/Paramedic Subcommittee
- 1995 to 1996: Hennepin County Medical Center Trauma Multidisciplinary Committee

PROFESSIONAL ASSOCIATIONS:

- American College of Emergency Physicians
- American Board of Emergency Medicine
- Society of Academic Emergency Medicine
- National Association of EMS Physicians

LICENSURE & CERTIFICATION:

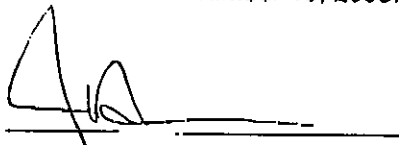
- Minnesota Peace Officers Standards and Training Board, License #18203
- Fellow of the American College of Emergency Physicians #355932
- Diplomate of the American Board of Emergency Medicine-1997
- Diplomate of the National Board of Medical Examiners-1994
- Minnesota Medical License #36894
- Nevada Medical License #8083
- ACLS/APLS/ATLS provider and instructor certified
- PALS provider certified
- TASER operator and instructor certified
- Minnesota Emergency Vehicle Operator Certification
- Minnesota Police Pursuit Vehicle Operator Certification
- Tactical EMS/SWAT Physician Certification
- California Firefighter Certification

REFERENCES:

- Excellent references provided upon request

I declare under penalty of perjury that the foregoing is true and correct

Executed on November 19, 2005.

A handwritten signature in black ink, appearing to be 'J. Ho', is written over a horizontal line. The signature is stylized with a large initial 'J' and a cursive 'Ho'.

Jeffrey Ho, M.D.